DN 99-101A US

PATENT
Non-Final

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (previously amended): A plastics additives powder composition providing a combination of impact modifying and processing characteristics in thermoplastic resins, the composition comprising powder particles comprising:

(a) from 50 to 98 parts by weight of impact modifier particles, the impact modifier particles comprising 80 to 100 parts by weight of at least one rubbery polymer and having a mean particle size greater than 100 nm;

(b) from 0 to 48 parts by weight of first processing aid particles; and

(c) from 2 to 50 parts by weight of second processing aid particles having a molecular weight of at least 1,000,000 g/mol, wherein the composition of the second processing aid particles is the same as, or different than, the composition of the first processing aid particles,

wherein the total parts by weight of the impact modifier particles, the first processing aid particles, and the second processing aid particles is equal to 100;

wherein the powder particle comprises a powder particle inner region and a powder particle outer region;

wherein the powder particle inner region comprises the impact modifier particles and the first processing aid particles;

wherein the powder particle outer region surrounds the powder particle inner region; and

wherein the powder particle outer region comprises the second processing aid particles.

Claim 2 (original): The composition according to claim 1, wherein the composition comprises from 82 to 93 parts by weight of impact modifier particles.

Claim 3 (original): The composition according to claim 1, wherein the impact modifier particles comprise:

from 80 to 96 parts by weight of at least one rubbery core polymer, and

from 4 to 20 parts by weight of at least one hard shell polymer.

Claim 4 (currently amended): A plastics additives powder composition providing a combination of impact modifying and processing characteristics in thermoplastic resins, the composition comprising ~~plural~~ powder particles comprising:

(a) from 82 to 93 parts by weight of impact modifier particles, the impact modifier particles having a mean particle size greater than 100 nm, the impact modifier particles comprising from 89 to 94 parts by weight of at least one rubbery polymer, and 6 to 11 parts by weight of at least one hard polymer;

(b) from 5 to 10 parts by weight of first processing aid particles having a mean particle size greater than 100 nm, the first processing aid particles having a molecular weight greater than 1,000,000 g/mol; and

(c) from 2 to 8 parts by weight of second processing aid particles having a mean particle size greater than 100 nm, the second processing aid particles having a molecular weight greater than 1,000,000 g/mol,

wherein the composition of the second processing aid particles is the same as, or different than, the composition of the first processing aid particles,

wherein the total parts by weight of the impact modifier particles, the first processing aid particles, and the second processing aid particles is equal to 100;

wherein the powder particle comprises a powder particle inner region and a powder particle outer region;

wherein the powder particle inner region comprises the impact modifier particles and the first processing aid particles;

wherein the powder particle outer region surrounds the powder particle inner region; and

wherein the powder particle outer region comprises the second processing aid particles.

Claim 5 (currently amended): A method for preparing a plastics additives powder providing a combination of impact modifying and processing characteristics in thermoplastic resins, the method comprising the steps of:

(a) preparing a first aqueous particle dispersion comprising:

(i) from 50 to 98 parts by weight of impact modifier particles, the impact modifier particles having a mean particle size greater than 100 nm, and

(ii) from 0 to 48 parts by weight of first processing aid particles;

(b) coagulating the first aqueous particle dispersion to form a coagulated slurry;

(c) adding a second aqueous particle dispersion to the coagulated slurry, the second aqueous particle dispersion comprising,

from 2 to 50 parts by weight of second processing aid particles having a molecular weight of at least 1,000,000 g/mol, wherein the composition of the second processing aid particles is the same or different than the composition of the first processing aid particles, and

wherein the total parts by weight of the impact modifier particles, the first processing aid particles, and the second processing aid particles is equal to 100; and

(d) drying the coagulated slurry to less than 5 weight percent water to form a free-flowing powder comprising ~~plural~~ powder particles.

Claim 6 (original): The method according to claim 5, wherein the first aqueous dispersion comprises:

from 80 to 95 parts by weight of impact modifier particles, and

from 3 to 18 parts by weight of first processing aid particles.

Claim 7 (original): The method according to claim 5, wherein the coagulated slurry in step (b) is formed at a temperature in the range of from 0°C to 45°C.

Claim 8 (original): The method according to claim 5, wherein the coagulated slurry after step (c) has a mean slurry particle size in the range of from 150 to 400 microns and a particle size distribution span less than 3.0.

Claim 9 (currently amended): A thermoplastic resin blend, comprising:

(A) a thermoplastic resin, and

(B) a plastics additives powder composition providing a combination of impact modifying and processing characteristics in thermoplastic resins, comprising ~~plural~~ powder particles comprising:

(a) from 50 to 98 parts by weight of impact modifier particles, the impact modifier particles comprising 80 to 100 parts by weight of at least

one rubbery polymer and having a mean particle size greater than 100 nm;

(b) from 0 to 48 parts by weight of first processing aid particles; and

(c) from 2 to 50 parts by weight of second processing aid particles having a molecular weight of at least 1,000,000 g/mol, wherein the composition of the second processing aid particles is the same as, or different than, the composition of the first processing aid particles,

and wherein the total parts by weight of the impact modifier particles, the first processing aid particles, and the second processing aid particles is equal to 100;

wherein the weight ratio of (A):(B) is in the range of from 1:99 to 99:1;

wherein the powder particle comprises a powder particle inner region and a powder particle outer region;

wherein the powder particle inner region comprises the impact modifier particles and the first processing aid particles;

wherein the powder particle outer region surrounds the powder particle inner region; and

wherein the powder particle outer region comprises the second processing aid particles.

Claim 10 (currently amended): A method for modifying a thermoplastic resin, comprising:

(I) melt blending:

(A) a thermoplastic resin; and

(B) a plastics additives powder composition providing a combination of impact modifying and processing characteristics in thermoplastic resins, the composition comprising ~~plural~~ powder particles comprising:

(a) from 50 to 98 parts by weight of impact modifier particles, the impact modifier particles comprising 80 to 100 parts by weight of at least one rubbery polymer and having a mean particle size greater than 100 nm;

(b) from 0 to 48 parts by weight of first processing aid particles; and

(c) from 2 to 50 parts by weight of second processing aid particles having a molecular weight of at least 1,000,000 g/mol, wherein the composition of the second processing aid particles is the same as, or different than, the composition of the first processing aid particles,

and wherein the total parts by weight of the impact modifier particles, the first processing aid particles, and the second processing aid particles is equal to 100;

wherein the weight ratio of (A):(B) is in the range of from 1:99 to 99:1;

wherein the powder particle comprises a powder particle inner region and a powder particle outer region;

wherein the powder particle inner region comprises the impact modifier particles and the first processing aid particles;

wherein the powder particle outer region surrounds the powder particle inner region; and

wherein the powder particle outer region comprises the second processing aid particles.

Claim 11 (currently amended): The plastics additives powder composition of Claim 1, wherein the ~~plural~~ powder particles have a mean slurry particle size in the range of from 150 to 400 microns and a particle size distribution span less than 3.0.